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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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February 10, 2003

Mr. Bryan L. Foley
United States Department of Energy
825 Jadwin Avenue, MSIN: A6-38
Richland, Washington 99352

Dear Mr. Foley:

Re: Review of Redline/Strikeout Remedial Investigation Work Plan for 200-PW-2 and 200-PW-4; Conditional Approval to Proceed with Field Work

The Washington State Department of Ecology (Ecology) has reviewed a redline/strikeout version of the *Uranium-Rich/General Process Condensate and Process Waste Group Operable Units Remedial Investigation/Feasibility Study (RI/FS) Work Plan and Resource Conservation and Recovery Act (RCRA) Treatment, Storage, or Disposal (TSD) Unit Sampling Plan*, that addresses the 200-PW-2 and 200-PW-4 operable units. The redline/strikeout was prepared subsequent to Tri-Party approval of Tri-Party Agreement Change Control Form #M-13-02-01, that approved consolidation of the remedial investigations for these two operable units. This redline/strikeout adds the 200-PW-4 operable unit to the previously submitted work plan for the 200-PW-2 operable unit.

Ecology's review comments are enclosed. Ecology identified two elements of the RI/FS work plan that are significantly deficient.

The text in this redline/strikeout clearly indicates ecological risk concerns. It identifies ecological hazard quotients substantially larger than 1, and modeled radiation dose greater than the United States Department of Energy's (USDOE's) own screening level of 1 rad/day. Ecology expects USDOE to propose site-specific (operable unit-specific) ecological characterization in response to those observations; none was proposed in this draft. We acknowledge that the preparation of a 200 Area-wide screening-level evaluation is in progress; however, that evaluation has not been submitted, reviewed, or approved. There is no existing basis to identify 200 Area-wide data requirements and key uncertainties. Ecology is not approving this work plan pending evaluation and identification of both site-specific and 200 Area-wide data needs.

A second deficient element is the exclusion of certain waste sites from the remedial investigation field work. The work plan acknowledges that certain waste sites are not aligned with the

conceptual models for 200-PW-2 OU representative waste sites. The work plan states that USDOE "will rely on the Remedial Investigation (RI) data being collected from the analogous waste sites in other operable units (OUs)." This proposal is unacceptable to Ecology because it would make the schedule and enforceable milestones for 200-PW-2 dependent on the schedules for other OUs. Ecology requests that USDOE revise this work plan to add sampling of one of the following sites: 216-S-1 & 2 Cribs, 216-S-7 Crib, or 216-S-8 Trench.

Ecology has separately reviewed and approved the Waste Control Plans for the 200-PW-2 and 200-PW-4 remedial investigation field work. Pending approval of the RI/FS Work Plan, Ecology gives conditional approval for USDOE to: collect nonradiological and radiological samples, and to geophysical logging of the planned boreholes and selected existing boreholes, as specified in Section 3.3 of the draft RI/FS Work Plan Sampling and Analysis Plan. USDOE and contractors should manage investigation waste as specified in the approved waste control plans.

If you have any questions, please feel free to contact Brenda Jentzen at (509) 736-5707 or me at (509) 736-3029.

Sincerely,

John B. Price
Environmental Restoration Project Manager
Nuclear Waste Program

BJ:sdb
Enclosure

cc: Nick Ceto, EPA
Craig Cameron, EPA
Joel Hebdon, USDOE
Rick Gay, CTUIR
Pat Sobotta, NPT
Russell Jim, YN
Ken Niles, OOE
Administrative Record: 200-PW-2 and 200-PW-4

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1.	General	A rule of thumb when presenting tables and figures in the text is that the table or figure should be inserted immediately after the first time referenced or on the following page. (e.g. Table 3-1 was not shown until 47 pages after the first reference in the text.) Please improve the format.
2.	General	The text with the representative sites information is vague. It would be better to give the information in the text that is included in the tables. (e.g. the effluent volume discharge is greater than soil pore volume) How much greater? The table indicates a number please provide that number in the text.
3.	General	When stating nitrate and nitrite results, levels, etc. always state how it is being expressed. It would be best to be consistent through out the document.
4.	General	Please differentiate between boreholes and ground water monitoring well in Figures 4-1, 4-2, 4-3, 4-4.
5.	General	Will Fluor continue to reference BHI documents (specifically in the SAP)? This merits explanatory text, e.g., if there will be a gradual transition to new procedures, and whether the new procedures may apply during the execution of this work plan.
6.	General	Some of Ecology's comments on previous 200 Area documents have general applicability and should be considered during the preparation of this and future documents. The following general comments, for example, were made for the 200-TW-1/200-TW-2/200-PW-5 Remedial Investigation Report, and also apply to this RI/FS work plan.
7.	General	References: • Please have a technical editor verify that each referenced document is available to the public. If they are unavailable, the citation should be revised. • Please remove references to draft documents that were noted as seriously deficient and have not been approved at this date (e.g., citation of *Ecological Evaluation of the Hanford 200 Areas – Phase I: Compilation of Existing 200 Area Ecological Data* on pg. 5-4).
8.	General	The reference (DOE-RL 2002b) on pg. 5-4 does not appear in the list of references. This type of error, although minor, suggests that the document would benefit from re-editing at a higher level of technical edit. The editing checklist should specifically verify that all citations appear in the references section, and that all documents listed in the references section are cited in the main text.
9.	ES-2, 1st ¶, last sentence	This sentence does not appear to be correct. All of the PW-4 waste sites are included not just these 2 TSD's.
10	Pg. 3-1, 3.1, 1st ¶	The PW-4 site appears to have also received organic contaminants. Why are these exclude in the text?
11	Pg. 3-1, 3.1 last ¶	From Table 3-8 Contaminants of Concern (COC), organic contaminants are included. This text does not support the COC list.
12	Pg. 3-3, 3.3.1.2,	Justify the use of 26 year old data for extent of contamination, e.g., explain the relevant QA/QC requirements.
13	Pg.3-4, 3.3.1.3, 1st ¶	What were the results for VOCs, semi-VOCs, and inorganic contaminants?
14	Pg. 3-4, 3.3.1.3 2nd ¶	What was the maximum depth of investigation for 216-U-8?
15	Pg. 3-9, 3.3.1.6, 2nd ¶	What were the results from samples collected and analyzed for non-radiological constituents?
16	Pg. 3-10, 4th ¶,	Why were nitrate values not shown in Table 3-1? How do you calculate the value for estimated contaminant inventory?
17	Pg. 3-13, 2nd ¶	What in this paragraph supports the statement that impact to groundwater is not expected to be significant?
18	Pg. 3-18, 3.4, 1st ¶	Delete the first ¶ of the Section 3.4. This ¶ discusses regulatory compliance and is out of place in this section. A better topic paragraph would discuss assessment monitoring and

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		corrective action monitoring. This section is also the appropriate place to provide an integrated description of soil and groundwater response actions.
19	Pg. 3-19, 3.4.1.1, 6th sentence	The objective of assessment monitoring is to evaluate the flux of constituents into the groundwater beneath the crib and monitor the known constituents until a corrective action is defined or the unit (crib, etc.) is closed.
20	Pg. 3-19, 3.4.1.3	Are any of these wells at the Point of Compliance?
21	Pg. 3-20, 3.4.1.4	The decline of contaminant concentration may be due to the change in ground water flow. The direction of flow is not well understood in this area.
22	Pg. 3-20, 3.4.1.4	Nitrate as what? NO_3^- or NO_3^-/N
23	Pg. 3-21,	1st sentence on page is repeated.
24	Pg. 3-21, 1st ¶, last sentence	The first and last part of the sentence is inconsistent, and the sentence should be revised • that it groundwater quality impacts have not been shown • that individual constituents are above MCLs
25	Pg. 3-22, 3.4.2.1	What is the basis for the statement that these three cribs probably contributed the greatest shared of contaminants to the groundwater (add supporting text)?
26	Pg. 3-22, 3.4.2.1, 3rd ¶, 3rd sentence	Tritium contained in discharges **between** 1983 and 1988……..
27	Pg. 3-22, 3.4.2.1, 3rd ¶, last sentence	Overall, the concentration of tritium in the groundwater is decreasing **but is well above the 20,000 pCi/L DWS.**
28	Pg. 3-23, 3.5.2,	There are 4 exposure pathways: Inhalation, Ingestion, Direct Contact (skin), and Injection. Inhalation is a separate pathway.
29	Pg. 3-24, 3.5.3, 2nd ¶, last sentence	What is the basis for the statement that the contamination pathway to ecological exposures for the waste sites are minimized due to stabilization activities that have been conducted? What about animals that burrow?
30	§3.5.3.1	This section on Human Health Risk should integrate the Hanford Advisory Board advice #132, and the Tri-Party response including the 200 Area risk framework.
31	§3.5.3.1	The Department of Energy has expressed a desire to go to final RODs on 200 Area soil operable units. That would seem appropriate where capping becomes the selected remedy, because capping is essentially an irreversible commitment in terms of the requirement that "Operable units, including interim action operable units, should not be inconsistent with nor preclude implementation of the expected final remedy." – 40 CFR 300.430. A quantitative risk assessment (including a quantitative baseline) will be necessary before a final record of decision (ROD) is written. When will a quantitative risk assessment be planned? Please explain what is planned more specifically in the document.
32	§3.5.3.2	The section makes the statement that "Uptake of contaminants from soil by vegetation was considered the primary source of contaminant entry to the food chain." The modeling results are inconclusive because they don't consider all pathways, including inhalation. A comprehensive analysis will be required to demonstrative protectiveness to all potential receptors (e.g., threatened and endangered species, and threats to potentially sensitive habitats including those of "New to Science" and "Unique to Hanford" species identified by the Nature Conservancy bio-diversity studies of the Hanford site).
33	§3.5.3.2	This section on Ecological Risk needs to be revised to incorporate the following elements: • Use of Chapter 173-340 Washington Administrative Code, Amended February 12, 2001, relative to Site-Specific Terrestrial Ecological Evaluation Procedures • use of the EPA guidance, *Guidelines for Ecological Risk Assessment* (FR 63(93):26846-26924) including the EPA framework of problem formulation, characterization of exposure, characterization of ecological effects, risk characterization, and risk management • The context of radiation exposure to biota of 1 rad/day as protective needs to be

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		explained, including the standing of DOE's biological dose technical standard as a To Be Considered (TBC) criteria under CERCLA. The basis of the technical standard needs to be summarized, including the history of the standard relative to previous ICRP and NCRP research. • The ecological risk assessment for this OU needs to specifically address threatened and endangered species. Those species and the "New to Science" and "Unique to Hanford" species identified by the Nature Conservancy bio-diversity survey of the Hanford site need to be evaluated per the requirement that "Environmental evaluations shall be performed to assess threats to the environment, especially sensitive habitats and critical habitats of species protected under the Endangered Species Act." – 40 CFR 300.430. This component of the ecological risk assessment needs to emphasize the elevated environmental hazard quotients (EHQs) noted for the 216-U-8 crib; Ecology expects that US DOE will propose site-specific ecological characterization during the remedial investigation (not post-ROD).
34	Pg. 3-25, 1st ¶, last sentence	What about inhalation as an exposure pathway?
35	Pg. 3-25,4th ¶, 3rd sentence	What is the basis for this statement? What data is available on non-rad. chemicals?
36	Pg. 3-30, 3-31, 3-35, 3-36, Figures 3-2 and 3-3, 3-7, 3-8	This legend does not work well in black and white. It is not possible to differentiate among the different plume contaminants.
37	Pg. 3-30, Figure 3-2, and 3-7	How is nitrate expressed?
38	Pg. 3-56, Table 3-7	Need to add one of the sites with Methyl isobutyl ketone as one of the representative sites. It is not appropriate to wait until post ROD.
39	Pg. 3-57, Table 3-8	Please list all contaminants as this table is misleading to the reader.
40	Pg. 4-2, 3rd ¶	The detailed look at previous characterization data should be performed during the RI, as the RI is the document used to determine if enough data is available to determine the appropriate remedial action.
41	Pg. 4-2, Last ¶	Disagree that the evaluation of the data and the associated conceptual model is performed in the FS. This should occur in the RI.
42	Pg. 4-5, 1st ¶	Change typographically to topographically
43	Pg. 4-14, Figure 4-3	What is the facility with all the boreholes or wells between 207-A-South and 216-A-37-1? Why were all the bore holes or wells drilled?
44	Section 5	Performance standards are discussed through-out Section 5; the specific regulatory or other-type citation should be included in ease case.
45	Section 5.1, Page 5-3 middle three paragraphs	The text, starting at "Recent revisions prompted by the EPA....." Through "Figure 1-1 of this work plan, and this section." should be deleted. Ecology did not adopt the portions of the regulations that would allow for alternative mechanisms to be used in lieu of post-closure permits or amendments to the requirements for post-closure permit applications.
46	Section 5.1, next to last paragraph	Please modify existing text to read "as the RCRA closure/corrective action after ~~issuance~~ completion of the public ~~notice and the comment~~ involvement process."
47	§5.2	US DOE has not submitted a satisfactory ecological evaluation for the 200 Area. Therefore it is incorrect to state that a strategy "is being implemented" when none of the document(s) implementing that strategy have been approved, and no actual field work has been initiated. Ecology acknowledges that it has discussed the strategy with DOE and EPA, and that Ecology agrees with the approach of doing some characterization site-wide, and some on an operable unit basis.

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		Ecology acknowledge that the preparation of a 200 Area-wide screening-level evaluation is in progress. A report on the screening-level evaluation should identify any ecological data needs that require specific investigation as part of the 200-PW-2 and 200-PW-4 remedial investigations. Ecology is not approving this work plan pending evaluation and identification of those data needs, if any. Section 3.5.3.2 of this work plan identifies elevated environmental hazard quotients and modeled radiation dose greater than DOE's technical standard of 1 rad/day. Therefore, Ecology expects that US DOE will propose site-specific ecological characterization during this remedial investigation (not post-ROD).
48	§5.2	The ecological risk assessment for this remedial investigation should use the EPA guidance, *Guidelines for Ecological Risk Assessment* (FR 63(93):26846-26924). The ecological risk assessment for this RI should use the standard EPA framework including • problem formulation • characterization of exposure • characterization of ecological effects • risk characterization • risk management Please note that the EPA framework includes interested parties dialogue during the planning/problem formulation step, and includes communicating results to interested parties during the risk management step.
49	§5.2, pg. 5-5	The work plan proposes to collect "analogous waste site data" in the post-ROD time frame, however; the Department of Energy has expressed a desire to propose final RODs for 200 Area soil operable units. A quantitative risk assessment (including a quantitative baseline) will be necessary before a final record of decision (ROD) is written. The necessary data to support a final ROD should be collected during the remedial investigation phase, not in the post-ROD time frame.
50	§5.2	The citation (DOE-RL 2002b) does not appear in the list of references. It is presumed that this refers to *Ecological Evaluation of the Hanford 200 Areas – Phase I: Compilation of Existing 200 Area Ecological Data*. The latter document was noted as seriously deficient and has not been approved at this date, so the citation should be deleted.
51	Section 5.2, last paragraph	The last ¶ and Figure 5.1 should be deleted. It's apparent that site-specific sampling will be required (see comment above), so this figure isn't relevant. The figure is also unclear without a legend to explain the usage of the dashed and shaded boxes.
52	Section 5.3.2.1, first paragraph	The new text at the end of the paragraph discusses several shallow borings at a depth of approximately 6m at the 207-A South Retention Basin. Will this level of characterization provide adequate data for TSD closure? Provide a reference to the DQO.
53	Section 5.3.3	There is no need for an Investigation Derived Waste Data Quality Objectives, as the Waste Control Plans state that waste "will be dispositioned using analytical results obtained from the soil contacted." Please modify text appropriately.
54	Section 5.3.4	This section states that the "analytes, methods, and associated target detection limits are provided in Table B-4 of the SAP." Ecology's reviews of recent documents identified discrepancies between a Data Quality Objectives (DQO) reports and SAPs; please describe how the translation was done (note, this comment does not require a change to the work plan text).
55	Section 5.3.5.2	This section presents various methods of data evaluation, but does not clearly state that the data will be evaluated against the WAC 173-303-610 performance standards (i.e., MTCA cleanup levels). Please add some text indicating that this evaluation will also be conducted.
56	Section 5.3.5.3, last paragraph	This section discusses the computer program RESRAD and how it will be used. A discussion of compliance with closure and corrective action requirements needs to be added, in particular, how the protection of groundwater will be evaluated.
57	Section 5.4	Move all bullets down one and insert the following new bullet "ARARs will be identified and the ability to comply with the substantive ARARs will be evaluated."

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58	Section 5.4	This section attempts to outline what will be included in the FS/Closure plan, but falls short. When discussing the performance standards found in WAC 173-303-610(2) either provide an exact citation, or a reference. An incomplete citation, including only a portion of the regulations, is misrepresenting the intent of the performance standard. Modify text appropriately.
59	Section 5.4	Although the CERCLA and RCRA requirements have been 'integrated', the requirements for a closure plan found in WAC 173-303-610(3) must still be met. Please modify the text to meet these requirements.
60	Chapter 5	Chapter 5 should be modified to more closely follow the outline and prescribed content provided in Chapter 2 of the Implementation Plan (DOE/RL-98-28), in particular Sections 5.3 (RI) and 5.4 (FS) of this RI/FS work plan should mirror Section 2.4.1 and 2.4.2 of the Implementation Plan.
61	Pg. B-24, Table B-4b	I would like to see (as an example) the calculations for the lead and copper MTCA and GW protection values.
62	Pg. B-24, Table B-5	Fix Columns
63	Pg. B-25, Table B-4b	Check to see if MCL is available for Chloride.